



**Report to the Senior Executive Council,  
Department of Defense**

## **CYCLE TIME TASK GROUP**

### **Report FY04-1**

- **Recommendations related to reducing cycle time for parts in the DoD aviation maintenance process**

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**December 2004**

**CYCLE TIME  
TASK GROUP REPORT**

**TASK**

This DBB Task Group was formed to further support efforts by the Department of Defense (DoD) as expressed in the Quadrennial Defense review to “compress the supply chain and improve readiness for major weapon systems and commodities.” The Task Group was a follow-on to a previous DBB Task Group on Performance-Based Logistics (DBB Report FY03-4). Specifically, this Task Group was asked to provide guidance on how to improve cycle times in the DoD supply chain. This report represents the findings and the advice of the Defense Business Board (DBB) on this topic.

The Terms of Reference (TOR) assigning this task to the Board proscribed the following specific deliverables:

1. Set Goals for DoD Supply Chain Customer Wait Time (CWT) and Logistics Response Time (LRT) Cycle Times that are achievable for DoD;
2. Review causes of CWT and LRT cycle time variability and make recommendations for reduction;
3. Quantify the improvement in readiness and reduced inventory from reduced CWT and LRT cycle time;
4. A summary recommendation including a cost/benefit analysis and identification of the significant management initiatives, including potential legislative changes, required for implementation and execution of a program to reduce CWT and LRT cycle times.

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Task Group Members: Ms. Barbara Barrett

Task Group Sponsors: Under Secretary of Defense (Comptroller)

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## **PROCESS**

Early in its investigation of the topic, the Task Group decided to narrow the scope of its work to an examination of the problem of back-ordered parts supplies in the aviation repair cycle. The aviation maintenance cycle contains fixed assets and inventory with extremely high value. Delays in the maintenance process due to parts availability have a profound impact on aircraft mission capable rates, but it also poses a high capital cost to the Department. As a result, the Task Group determined that a focus on this area could have substantial benefits. The revised deliverable focus included:

1. Examination of cycle time delays for both Customer Wait Time (CWT) and Logistics Response Time (LRT) within the Aviation repair process:
  - a. High value of inventory
  - b. High impact on readiness
2. Focus on delays related to backordered parts and unplanned direct vendor delivery (DVD) parts:
  - a. Longest cycle times
  - b. Biggest variability in cycle times
3. Benchmark of best-in-class commercial operators to understand how they have addressed these cycle time issues;
4. Summary recommendations including a cost/benefit analysis where appropriate that identifies the significant management initiatives, including potential legislative changes, required for implementation and execution of a program to reduce cycle times for backordered and DVD parts.

The Task Group interviewed members of the DoD Supply Chain Integration Team and also review several previous studies on parts management in DoD in order to develop/summarize broad themes/improvement areas that could benefit from further high level emphasis in the Department. A summary of the conclusions of many of these previous studies is as follows:

- Delays in the order cycle times for components/parts can adversely affect readiness and disrupt depot repair and overhaul programs.

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- Reducing cycle times can save money and may improve weapon system support, if not countered by increased demand for critical parts.
- There are numerous causes of cycle delays ranging from increased demand exhausting available stocks to problems in replenishing inventories.

The Task Group also conducted several industry best practice interviews in order to gain an understanding of how best-in-class aircraft operators addressed their parts management and maintenance challenges. Best practice companies were selected based upon industry reputation and their unique operating models. Each company had different models, and addressed parts issues in a slightly different way:

- Delta Air Lines (multiple aircraft types, in-house maintenance)
- FedEx (multiple aircraft types, hybrid maintenance)
- UPS (multiple aircraft types, hybrid maintenance)
- Southwest Airlines (single aircraft type, outsourced maintenance)

The Task Group's observations of the private sector generated a series of industry best-practices many of which the Department could adopt in its current and future operational structure.

Finally, the Task Group visited two DoD depot-level sites and one air logistics center to gain an understanding of current efforts to manage parts issues at the operational level. Task Group members visited NAVAIR at the Naval Air Station Patuxent River, the Naval Air Depot at Naval Air Station Jacksonville, and the Warner Robins Air Logistics Center. Significant efforts to address better parts management and aviation maintenance process improvement was observed at all three locations.

## **RECOMMENDATIONS**

The Task Group grouped its 7 recommendations into 2 categories. The first, "Immediate Actions," address actions that the Department can do today within its current operational construct. The second, "Long Term Acquisition Policy," require integration to a broader strategy for reformed acquisition policy. Each individual recommendation seeks to address the problem of aviation parts management through process improvement and proactive management of both internal DoD personnel and the vendor base.

## **Immediate Actions**

1. Align performance goals of various entities within the supply chain (eliminate “sub-optimization”). Develop “integrated operation” to focus supply chain on critical parts that impact aircraft availability and readiness:
  - Quantify/communicate the “cost” of aircraft non-availability
  - Assign ownership for parts that have direct impact on mission capability
  - Focus supply chain on responding to critical requirements
  - Reduce need for cannibalization

Traditional business thinking in the Department tends not to be aligned around horizontal, end-to-end processes. Rather, optimization occurs more frequently in functional stove-pipes that may, or may not, be focused on warfighter needs defined in terms of readiness, aircraft availability, etc. Significant improvements in parts management could be achieved through the use of horizontal, cross-functional objectives that align the supply and maintenance processes with common metrics driven by warfighter requirements. Best practice airlines operate with a clearly understood set of operational metrics that drive performance across the organization. The Navy’s use of common metrics in the Naval Aviation Readiness Improvement Team (NAVRIT) program is an example of how a similar approach can yield measurable benefits to the Department. The lessons of such programs should be shared across DoD.

2. Actively push “LEAN” and Six Sigma operating principles at the Depot level:
  - Reward/provide incentives for continued progress
  - Share best practices across Services

LEAN and Six Sigma operating principles serve to highlight critical bottlenecks and production variances in the maintenance cycle. Visibility into these issues allows for better planning and reduces work in process inventory requirements. The Department has made significant progress in this regard at both its Air Logistics Centers and the Naval Depots. These activities should be encouraged, and rewarded, with further investment to advance and improve these processes.

**3. Improve Measurement**

- Correct disconnects between actual response times and expectations of the logistics models currently in use
- Measure costs of delayed cycle times and/or cannibalization

Current measures at the DoD level of cycle times are not standard and do not provide good insight as to whether cycle time delays for parts have an impact on operational factors for the warfighter. Best practice airlines are keenly aware of the operational costs related to parts delays. DoD could do a much better job of quantifying the operational impact of parts delays in order to focus management on resolving high-impact issues with a sense of urgency.

**4. Active Vendor Management and Enforcement:**

- Scorecard/communicate vendor performance
- Enforce mix of positive and negative incentives to ensure timely delivery

Although enabled by current acquisition policy, DoD has not actively utilized negative incentives to enforce delivery times with parts vendors. Best practice airlines actively monitored vendor performance and used a mix of positive and negative incentives to motivate vendor performance.

**Long-Term Acquisition Policy**

**5. Continue to Advance Performance-Based Logistics (PBL):**

- Enlist vendor base in improving cycle time management
- Airline best practice for those employing extensive outsourcing of the maintenance functions
- Look for “big PBL wins” like complete engine support that demand extensive parts management

PBL provides an excellent opportunity for public-private partnerships that can leverage commercial manufacturing capabilities and expertise to improve parts quality, availability, cost, and management. Several PBL success stories exist in DoD aviation maintenance, but mostly on smaller dollar value contracts. The Department should continue to push for broader

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PBL utilization to include more significant aircraft items such as engines which require massive inventory management programs to sustain.

### 6. Leverage DoD-wide Aircraft Parts Supply Where Possible

- Total asset visibility and needs prioritization should drive business rules that allow cross-Service access to common parts

The Department should seek to facilitate as much common parts sharing across the Services as possible. This will require clearer business rules defining mission priorities and more capable systems to manage intra-departmental transfers.

### 7. Leverage Common Aircraft Platforms

- Future acquisition policy should consider commonality and interoperability of airframe and components where practical

Future aircraft acquisitions should factor the value of using common airframes across the Services when practical. Broader fleet standardization of airframes and engines could significantly reduce inventory requirements, and improve parts cycle times. While achieving specific mission capabilities should always take precedence in acquisition policy, common platforms can have a significant impact in improving mission capable rates through more efficient inventory management.

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